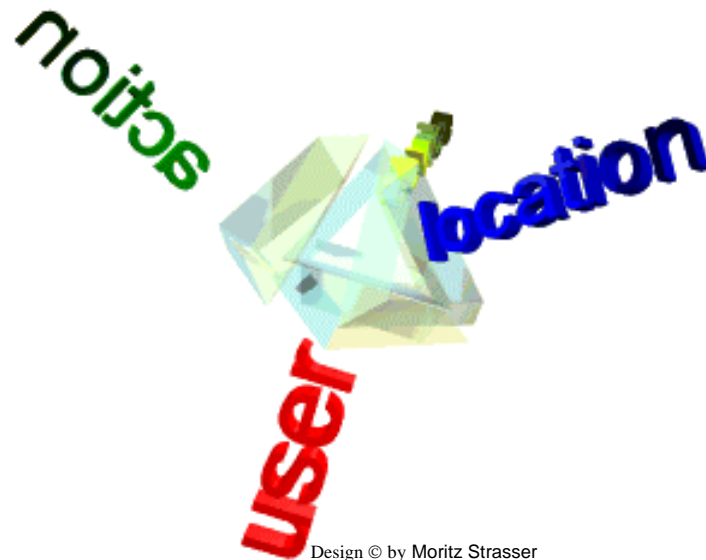




Addressing the Location in Spontaneous Networks

Enabling BOTH: Privacy and E-Commerce

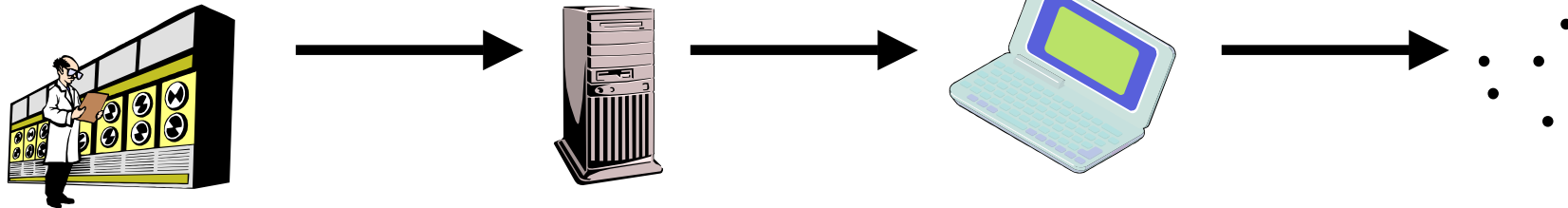


Design © by Moritz Strasser



Trends

- „Disappearing“ computers



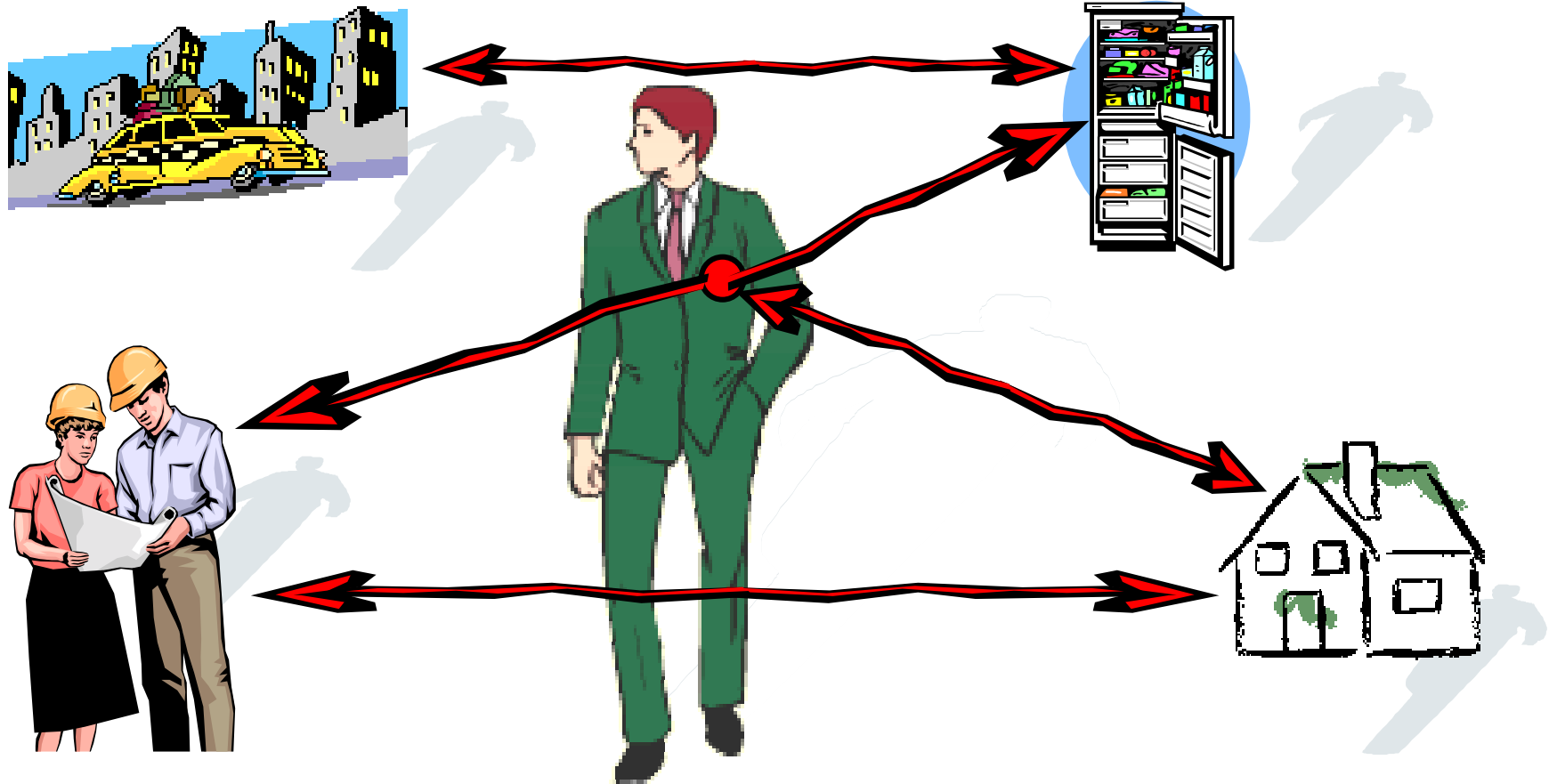
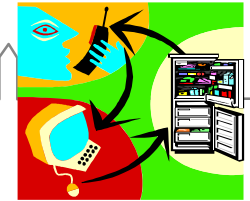
- Mobility



and Spontaneous Networks
(MANET = Mobile
Ad hoc Network)

- E-Commerce



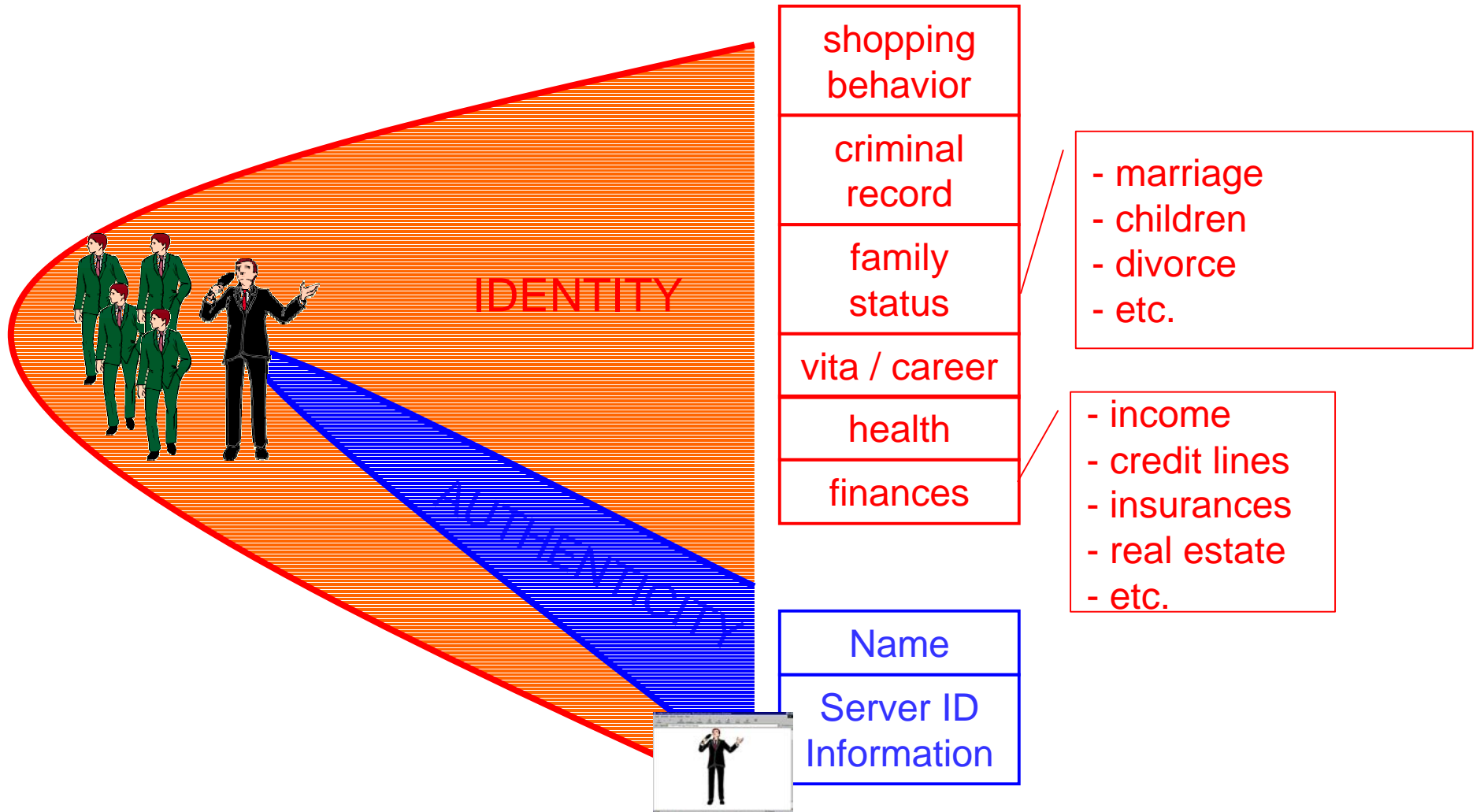


Spontane Vernetzung:
Überall, alles, jederzeit



Privacy?

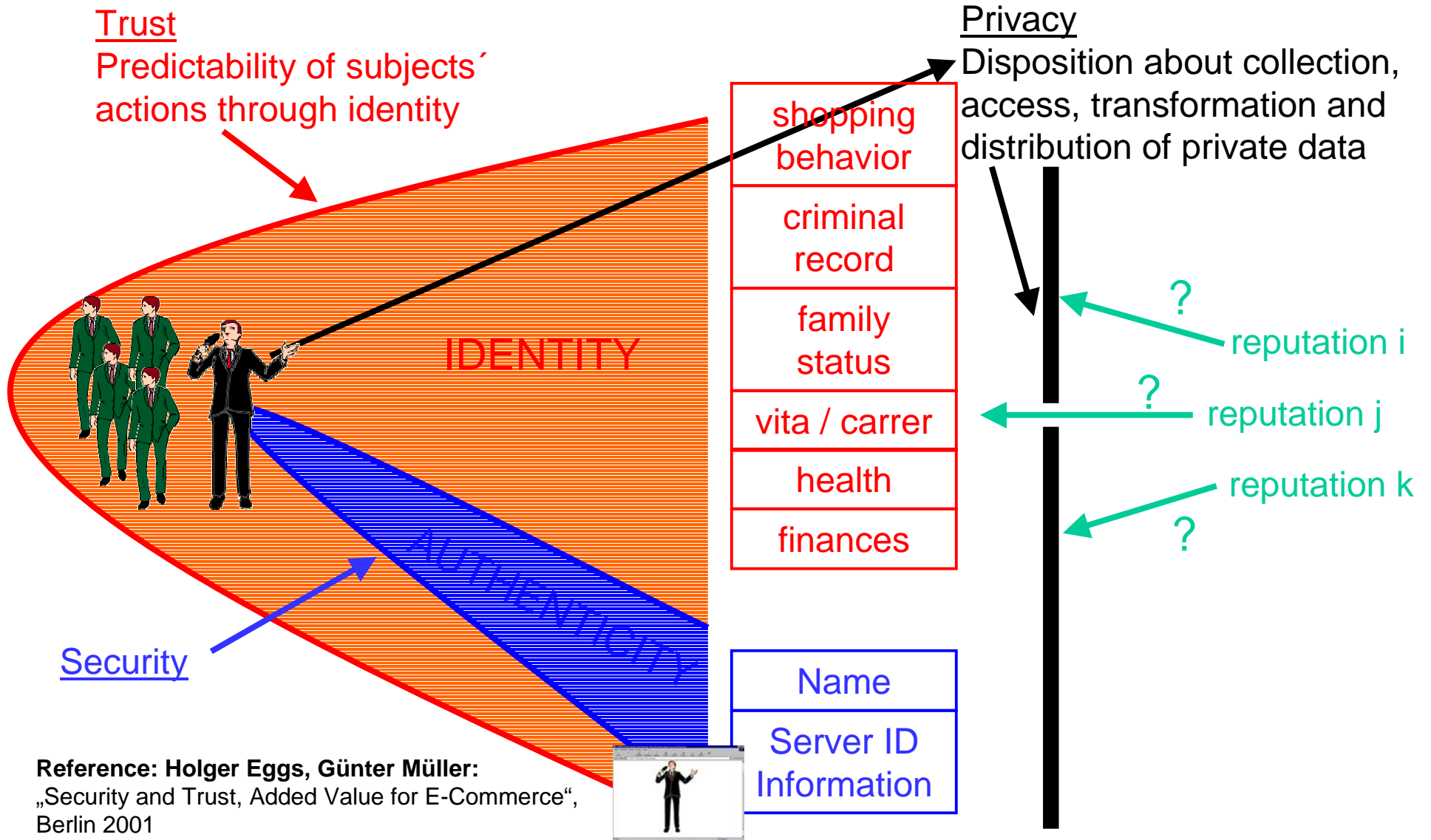
Security: Authenticity, Trust: Identity



IIG Institut für Informatik und Gesellschaft, Abteilung Telematik, Albert-Ludwigs-Universität Freiburg

Security: Authenticity, Trust: Identity

Privacy: Right of disposition





Desired ...

- Protecting the identity in a spontaneous network of small mobile devices (Privacy!).
- Remaining anonymous during roaming and information retrieval.
- Revealing the identity not until the exchange of values (i.e. not until authentication and other security mechanisms are really necessary).



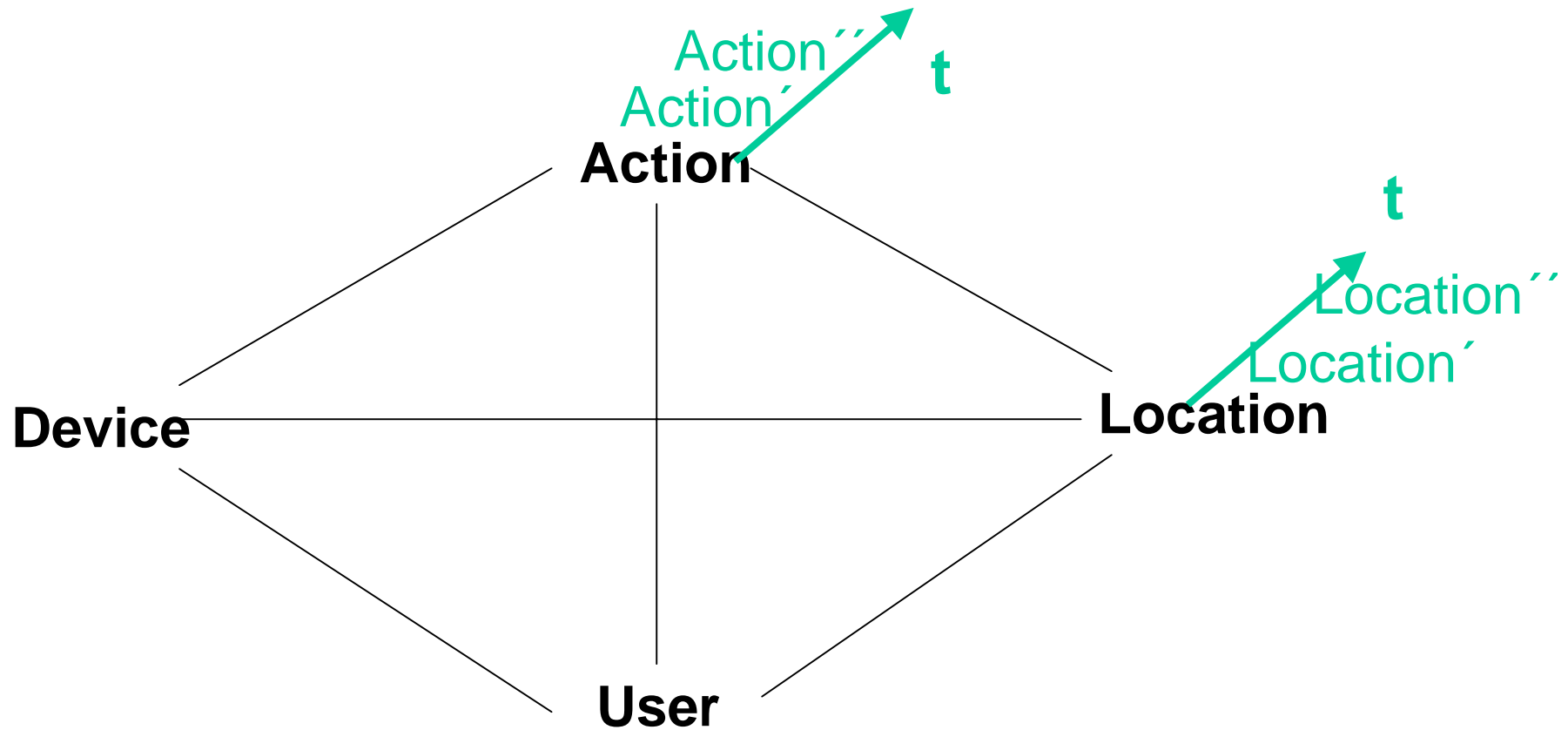
Classical Means to Protect the Identity

- Mixes (Chaum)
- Onion Routing (Goldschlag, Reed, Syverson)
- Crowds (Reiter and Rubin)
- Hordes (Shields, Levine)
- Anonymizer: Proxies
- ...

They all have one severe disadvantage:
They need a **complex infrastructure!**



Privacy Diamond



The Diamond shows how to cope with Pervasive Computing!



Relationships in the Privacy Diamond

Relationships can be strengthened or weakened!

Strengthen



Accountability

Weaken

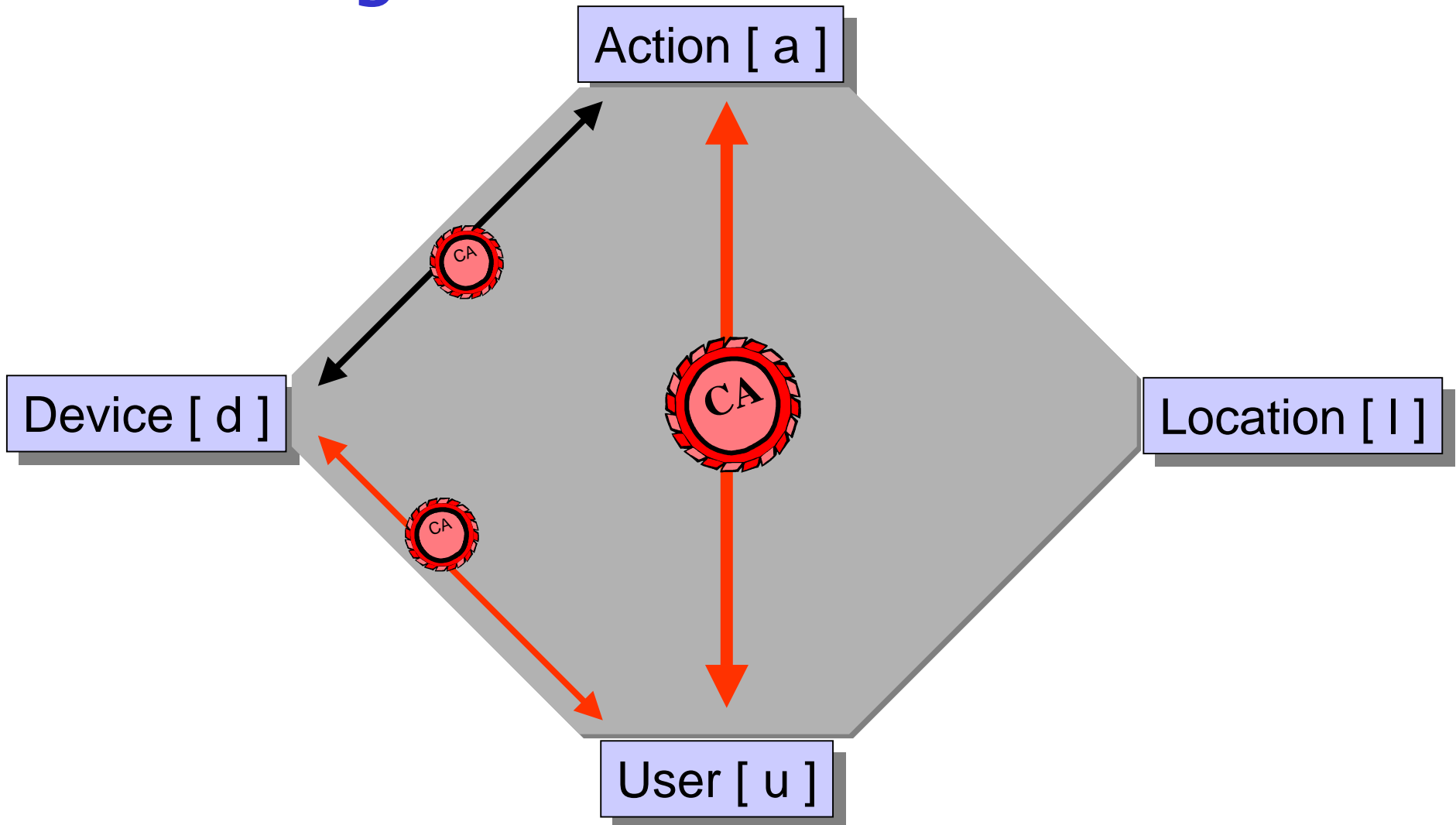


Privacy

| from \ to | Action | Location | Device | User |
|-----------|---|---|--|--|
| Action | | Which action was performed at the location? | Which action was performed with this device? | Which action was performed by the user? |
| Location | From where was the action initiated? | | Where was the device? | Where was the user? |
| Device | Which device have been used? | Which device was at the location? | | Which device did the user use? |
| User | Which user performed the action? | Which user was at the location? | Which user operated the device? | |

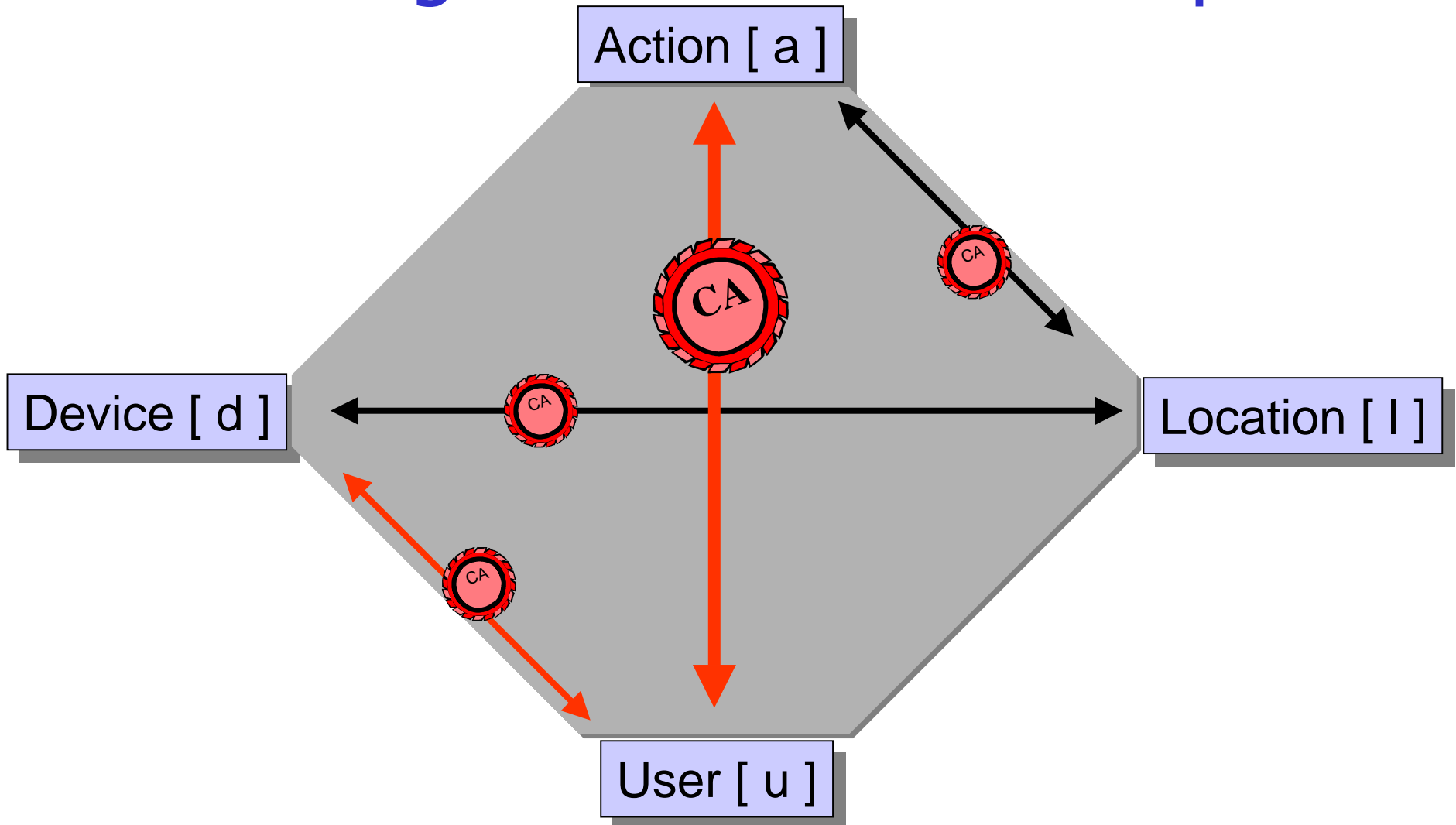


Strengthen: PKI in the Internet



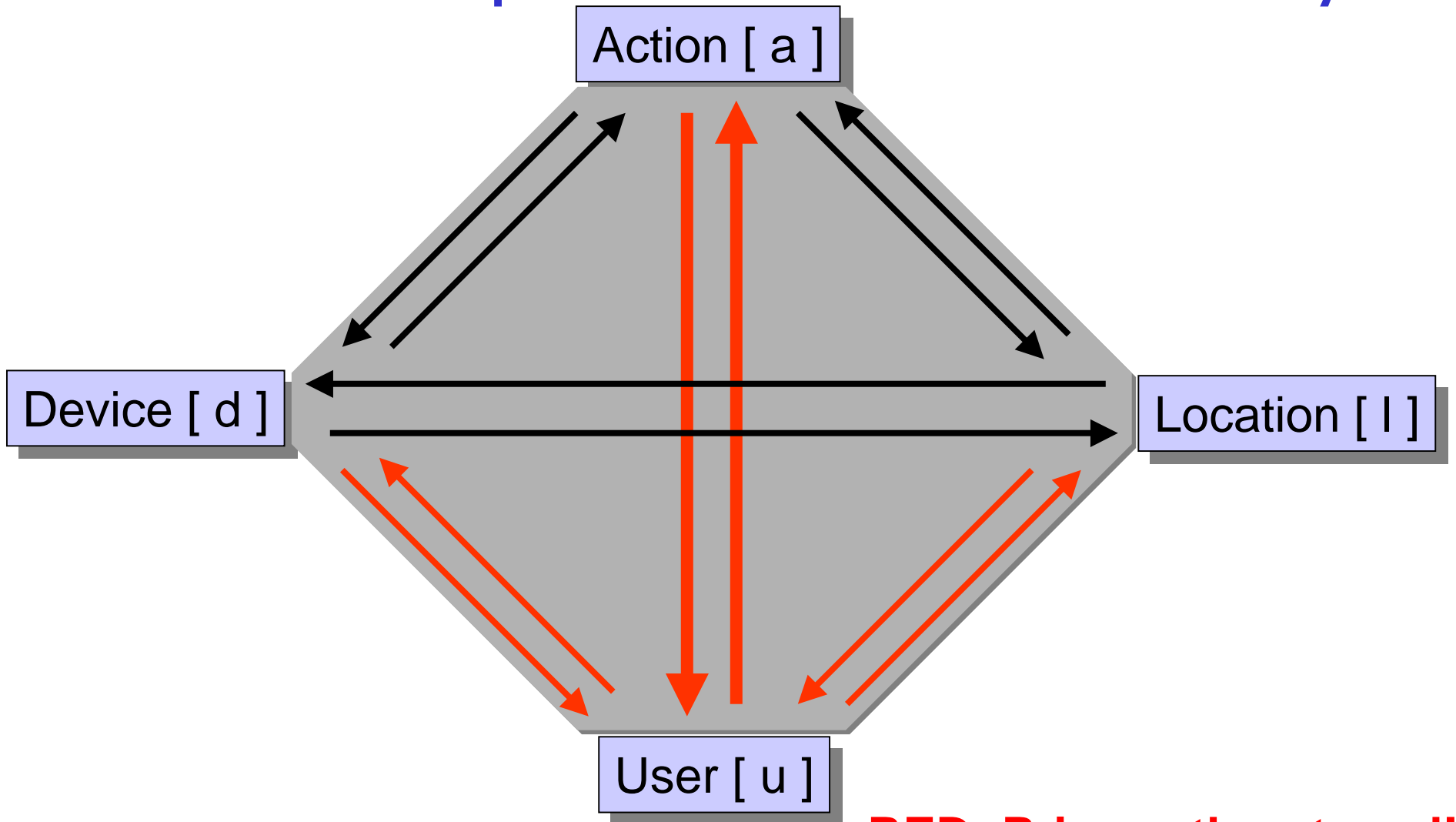


Strengthen: Location Stamp





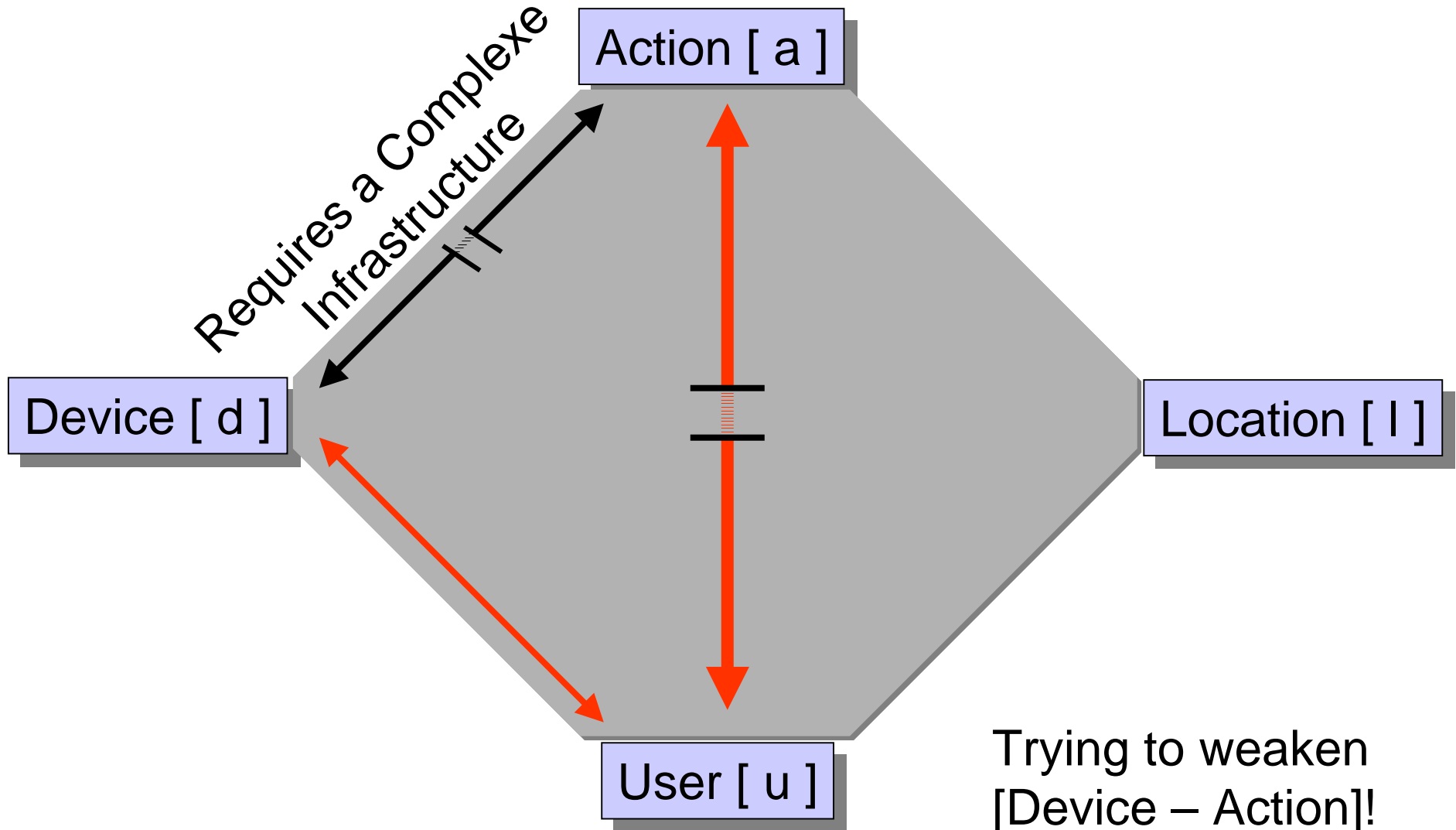
Relationships that threaten Privacy



RED: Privacy threatened!

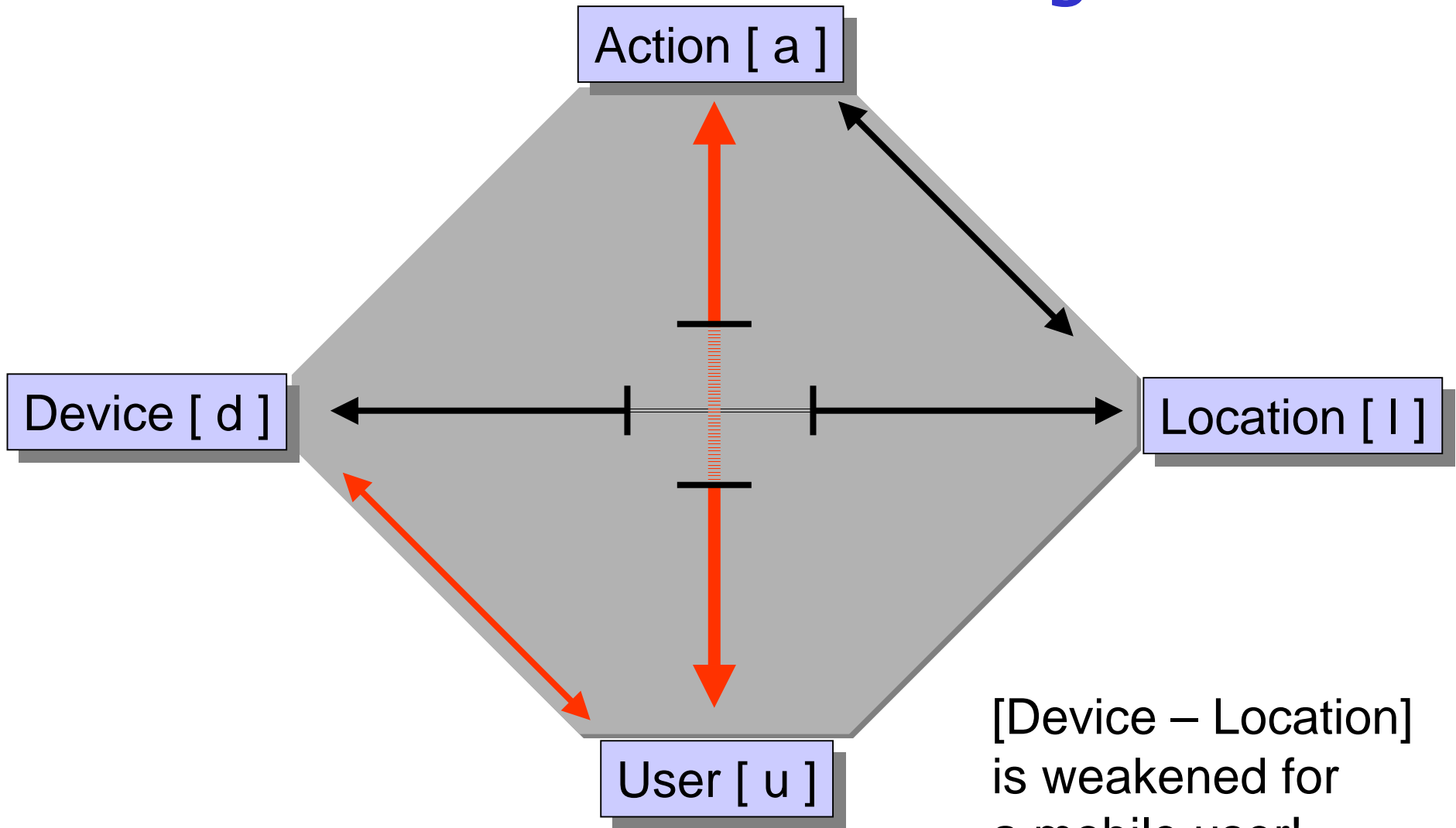


Mixes in the Internet





Location Addressing



[Device – Location]
is weakened for
a mobile user!

Natural Pseudonym Location/Time

Asahi Shinbun
und BZ?



Asahi Shinbun
und BZ!



Anonymity partially possible



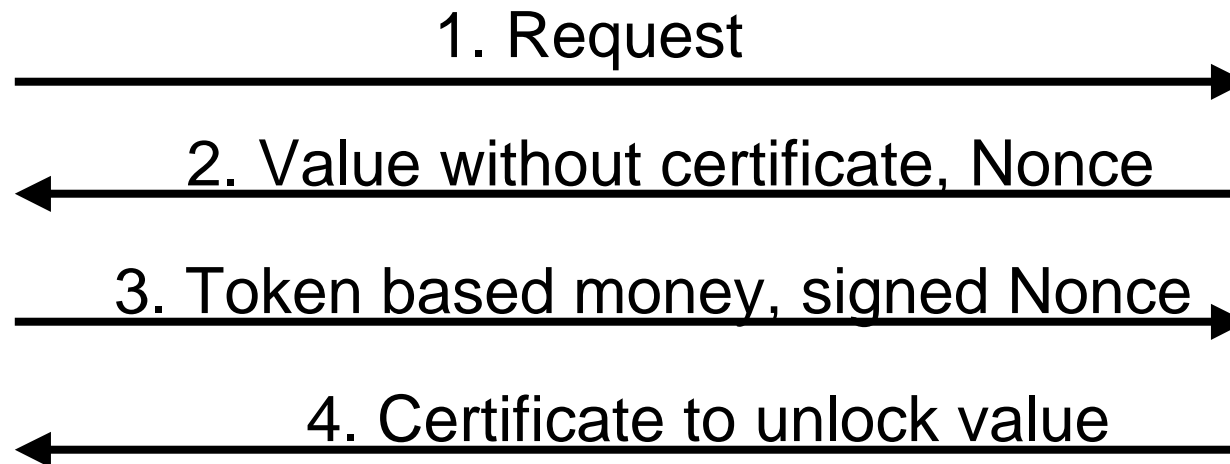
Controlled transparency



Transactional Security

Mobile Device

Shop / Service Provider



- A = Atomicity: all or none
- C = Consistency: valid state to valid state
- I = Isolation: no concurrent access to same data
- D = Durability: changes are permanent